

BASIC INFORMATION

Application No.:	9612003-5	Filing date:	24/Apr/1995
PCT Application No.:	PCT/CA95/00221		
Publication Number:	35514		
Priority claimed:	27/05/1994 CA 2,124,492		
Title of Invention:	HOUSING SYSTEM WITH STRUCTURAL CORED HOLLOW COMPONENTS		
Applicant/Proprietor:	ROYAL BUILDING SYSTEMS (CDN) LIMITED (ON, CA) 1 ROYAL GATE BLVD WOODBRIDGE, ONTARIO L4L 8Z7 ONTARIO CANADA		
Inventor(s):	DE ZEN, VITTORIO 300 GREENBROOK DRIVE, WOODBRIDGE, ONTARIO L4L 1A6 ONTARIO CANADA		
International Patent Classification:	E04B 2/86		
Patent Agent:	DREW & NAPIER		
PCT Publication No.:	WO 95/33106		
Date of grant of patent:	21/Dec/1998		

**TITLE: HOUSING SYSTEM WITH STRUCTURAL CORED
HOLLOW COMPONENTS**

FIELD OF THE INVENTION

5

This invention relates to a modular building system of the type disclosed in my Canadian Application Serial Number 2,070,079, filed May 29th, 1992, where houses or other building structures can be easily and quickly erected using prefabricated extruded thermoplastic interlocking structural components.

10

The present invention is further to my Canadian Application Serial No. 2,097,226, filed May 28th, 1993, which provides for internal communication between the interlocking structural components disclosed in my said Application Serial No. 2,070,079 and is directed to providing a modular building system which enables the erection of modular houses or other building structures having high aesthetic appeal while providing superior structural strength at significantly lower costs than heretofore possible.

20

BACKGROUND OF THE INVENTION

There have been provided building elements which are principally limited to the construction of walls which when assembled together present hollow interiors intended to receive concrete or the like and the elements are provided with holes which afford internal communication between adjoining elements through which the concrete can flow. For example, German Specification DE-C-3003446 discloses the use of a large series of hollow square rectangular elements constructed from impregnated pressboard which are stood up side by side and then tied together by means of tie rods. The adjacent side walls of these blocks have holes therethrough so that when concrete is introduced therein it can flow therebetween to interconnect same. When such elements are used as ceilings, the holes therein are upwardly facing so that there is no provision for lateral concrete flow between

30

35

- adjoining elements. These hollow blocks or elements are awkward to assemble and require a great deal of handling of a large number of individual elements in their assembly into a wall formation. Moreover, their manufacture is relatively expensive requiring the assembly of the pressboard into square or rectangular form and the resulting wall does not present an impervious smooth aesthetic wall surface.

10 A similar brick-like building element is disclosed in German Specification DE-C-3234489 which also has similar disadvantages.

- U.S. Patent 5,216,863 discloses an elongated thin flexible walled cylinder-like shaped formwork elements with the elements being mutually interconnectable and when interconnected they provide a series of adjoining closed cylinders. These cylinders are internally connected through openings so that when concrete is poured therein it will flow therethrough to create a wall formed by a series of interconnected vertical concrete columns encompassed by the thin formwork walls which may be left in place or discarded.

- 20 The formwork walls may be formed of polyvinyl chloride (PVC) to give the columns an attractive surface coating.

- Again, these individual formwork elements require a great deal of handling and, if they are formed of PVC, only virgin material can be used and the material cut out to provide the apertures becomes waste material.

- These formwork elements do not have individual structural integrity but require mutual interconnection and their cylindrical form to give them any structural substance capable of withstanding the introduction therein of wet concrete.

SUMMARY OF THE INVENTION

According to the present invention, a unique modular building system is provided through the use of novel hollow rectilinear extruded thermoplastic precision interlocking structural components which have a composite structure and which have been cored in a manner to allow optimum continuous interior communication therebetween when same are connected in interlocking engagement while still maintaining their individual structural integrity, the composition of the extruded components being such that the cored material can be returned for reuse in the extrusion process without impairment to the aesthetics of the components. As a result the invention provides a most important material cost savings while at the same time providing a very significant component weight reduction to reduce shipping costs and facilitate handling during both shipping and building erection.

In this connection, according to the invention, the extruded thermoplastic components are formed as a coextrusion of a substrate which may constitute or contain reground thermoplastic material and a thin outer protective and aesthetically appealing skin of virgin material covering the exterior exposed surfaces thereof whereby the material removed by cutting, punching, drilling or the like in providing the cored openings therein can be recycled to be used in the extrusion of the substrate of the co-extrusion without adversely affecting the integrity or visual appeal of the components.

Further, in this connection, the invention provides for a skin component which is fully compatible with the substrate component so that when same is recycled for subsequent substrate extrusion the substrate will not be adversely affected.

The invention also provides for the maintenance of correct rectilinear form and precision interlock by co-extruding components subject to distortion on coring out of rectilinear shape to be returned thereto in the coring operation.

SUBSTITUTE SHEET